

Notice of Allowability	Application No.	Applicant(s)	
	09/839,097	VERMA ET AL.	
	Examiner	Art Unit	
	Jeffrey R. West	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Amendment filed January 28, 2005.
2. ☒ The allowed claim(s) is/are 14-27, 29, 30 and 32.
3. ☒ The drawings filed on 21 November 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION***Allowable Subject Matter***

1. Claims 14-27, 29, 30, and 32 are considered to be allowable over the cited prior art for the following reasons.

U.S. Patent No. 6,539,353 to Jiang et al. discloses a method for performing confidence measures using sub-word-dependent weighting of sub-word confidence scores for robust speech recognition comprising computing a weight (i.e. a and/or b) for each of a plurality of classifiers (i.e. $f_{\text{class}}(U_i)$) (column 6, lines 10-17), wherein the classifiers indicate a manner of classifying a sample in one of a number of predetermined classes (column 6, lines 4-5), calculating for each of a the predetermined classes a weighted summation/confidence summation (i.e. the summation of $f_{\text{class}}(U_i)(x_i)$) across the classifiers of a likelihood that the speech sample belongs to a particular class, weighted by said weight value, (column 5, line 53 to column 6, line 1), and designating the speech sample as belonging to the class for which the weighted summation confidence measurement indicates (i.e. successfully fitting into one of the predetermined classes) (column 6, lines 18-23 and 38-44).

Jiang also discloses performing the method using an input means to receive data (column 3, lines 3-12) and a processor means, with associated code stored on a computer readable medium, for executing the processing (column 2, lines 30-35 and 44-56).

U.S. Patent No. 5,880,767 to Liu teaches a perceptual image resolution enhancement system for processing and sharpening various types of images by filtering the input image to extract a plurality of components (column 1, lines 41-56) and classifying the data for adaptive sharpening of the image (column 2, lines 17-28) wherein the filtering is carried out using a nonlinear order static filter (i.e. L-filter) for weighting the components as a sum of the defined coefficients multiplied by ascendingly/descendingly ordered data (column 5, lines 10-25).

U.S. Patent No. 2002/0152069 to Gao et al. teaches an apparatus and method for robust pattern recognition including means performing a maximum likelihood linear transformation as well as assigning a plurality of weights based on a particular class being evaluated.

U.S. Patent Application Publication No. 2002/0156793 to Jaro teaches categorization based on record linkage theory including means for establishing a confidence level by determining a weight for each of a plurality of categories.

U.S. Patent Application Publication No. 2001/0043140 to Ross teaches a media validation method that calculates a log-likelihood for an individual sample using a Bayesian classifier.

U.S. Patent No. 6,633,844 to Verma et al. teaches late integration in audio-visual continuous speech recognition as part of a decision fusion application by determining a plurality of weighted combined likelihoods.

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U.S. Patent No. 6,532,305 to Hammen teaches a machine learning method for classifying patterns by selecting a class having a greatest log-likelihood of a weighted summation.

U.S. Patent No. 6,421,640 to Dolfing et al. teaches speech recognition using confidence measure evaluation that determines first and second confidence measures.

U.S. Patent No. 6,493,667 to de Souza et al. teaches enhanced likelihood computation using regression in a speech recognition system using a weighted combined likelihood.

U.S. Patent No. 6,370,505 to Odell teaches speech a recognition system and method including means for classifying an output state by generating a weighted combined likelihood.

U.S. Patent No. 6,285,785 to Bellegarda et al. teaches message recognition employing integrated speech and handwriting information as part of a fusion application that determines a plurality of likelihood scores and normalizes the likelihood scores by corresponding average likelihood scores.

U.S. Patent No. 6,243,493 to Brown et al. teaches a method and apparatus for handwriting recognition using invariant features including means for determining a weighted log likelihood.

U.S. Patent No. 6,219,639 to Bakis et al. teaches a method and apparatus for recognizing identity of individuals employing synchronized biometrics including

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means for determining two weighting values for application to corresponding likelihood functions.

As noted above, the cited prior art teaches many of the features of the claimed invention. None of the cited prior art, however, teaches or suggests, in combination with the other limitations for determining a manner of classifying data samples in one of a number of predetermined classes comprising first and second classes, classifying each data sample in a second class by calculating a combined log-likelihood value for each second class, wherein said log-likelihood comprises a summation of likelihoods of a plurality of data classifiers, which are associated in a decision fusion application and indicate a manner of classifying a data sample in one of a number of first classes, weighted by said weight value assigned for each data classifier as a function of a sample confidence value for each data sample and an overall confidence value determined from said sample confidence values.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the

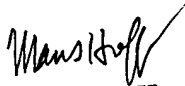
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examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)272-2216. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jrw
March 20, 2005


MARC S. HOFF
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TECHNOLOGY CENTER 2800